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# ***OAR Box 1214***

*Prepped by Ollie Stewart*

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**A-91-46**

STATE OF CALIFORNIA

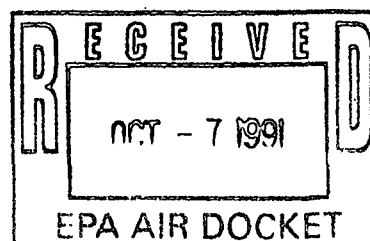
## AIR RESOURCES BOARD

1102 Q STREET  
P.O. BOX 2815  
SACRAMENTO, CA 95812A-91-46  
IV-D-35  
PETE WILSON, Governor

October 4, 1991

Air Docket (LE-131)  
Room M-1500  
401 M Street, SW  
Washington, DC 20460

To The Docket:



This letter is in response to FRL 3979-2, Fuels and Fuel Additives; Waiver Application which appeared in the 56 Federal Register 36810 (August 1, 1991). In this application, Ethyl Corporation is seeking a waiver for the addition of up to 0.0312 gram manganese in the form of the additive methylcyclopentadienyl manganese tricarbonyl (MMT) to be blended in unleaded gasoline. The California Air Resources Board (ARB) opposes the use of MMT in gasoline, as previously expressed in our letter of August 10, 1990 (copy enclosed).

Under the provisions of section 211(f)(4) of the Clean Air Act, an applicant for a waiver must demonstrate that "...such fuel or fuel additive or a specified concentration thereof, and the emission products of such fuel or additive or specified concentration thereof, will not cause or contribute to a failure of any emissions control device or system (over the useful life of any vehicle in which such device or system is used) to achieve compliance by the vehicle with the emission standard with respect to which it has been certified..." We are not convinced that Ethyl has made this demonstration and recommend that the request for a waiver be denied.

We believe that Ethyl's deficiencies in meeting the provisions of section 211(f)(4) fall in the following two areas: (1) the effects of MMT on current catalyst technology and especially on the newer electrically heated catalyst technology are not fully known, and (2) vehicle testing should be conducted out to 100,000 miles to evaluate fully long term effects on catalysts of MMT usage. In addition, we are concerned that the health effects of MMT are not fully known with respect to low levels of manganese. Following is a more detailed discussion of our concerns.

We are concerned that the use of MMT in gasoline may result in the poisoning of catalytic converters. Past research was conducted on only current catalyst technology. We want to stress the importance of ensuring that motor vehicle testing conducted for MMT-containing gasoline includes vehicles equipped with emissions control technology (such as the

October 4, 1991

electrically heated catalyst) that may become more common in the future. Electrically heated catalysts (EHC) may be much more sensitive to poisoning than existing catalyst technology since EHCs are expected to have a much lower hydrocarbon output than older catalysts. Thus, even small amounts of manganese may significantly degrade the effectiveness of EHCs. The Environmental Protection Agency (EPA) stated in a previous waiver denial "...where the emissions technology is available and imminent, and is reasonably certain to be applied in a prospective model year, the effects of MMT upon such technology should be examined" (43 FR 41424, 41426). We are not aware of any data demonstrating the effect of MMT on these newer catalysts.

As previously stated, according to the requirements for obtaining a waiver, Ethyl must establish that MMT will not cause or contribute to the failure of any emission control device or system over the useful life of any vehicle in which such device or system is used. We believe that any motor vehicle testing should be conducted out to 100,000 miles and include testing of EHCs to show that MMT will not result in catalyst poisoning. We support the EPA's earlier positions and believe that any waiver application for the use of MMT must demonstrate no increase in the deterioration of existing and anticipated emission control systems and components.

We also are concerned that the health effects of MMT are not fully known with respect to chronic exposure to low levels of manganese. Past research has indicated that exposure to manganese may be associated with neurological damage. In our August 10, 1990 letter, we noted that the EPA is authorized to regulate fuel additives pursuant to section 211(a) and (b) of the Clean Air Act in order to protect public health, and accordingly recommend that EPA request pursuant to section 211(b) that Ethyl submit additional information addressing the incremental effects of manganese added to the ambient air as a result of MMT usage. We continue to believe that in light of the waiver request, the EPA should carefully consider the health effects of MMT, and should consider action under section 211(c) to avoid potential adverse health impacts.

The ARB has long been concerned about MMT and has had a restriction on the use of MMT in unleaded gasoline since 1977. California Code of Regulations Section 2254 Title 13 states that "...no person shall add manganese or any manganese compound including the compound methylcyclopentadienyl manganese tricarbonyl (MMT) to unleaded gasoline intended to be sold, offered for sale, or delivered for sale at retail in the State of California." We remain strongly committed to the enforcement of this regulation.

Based on the information we have seen to date, we cannot support the approval of Ethyl's application for a waiver. The ARB plans to continue enforcement of its ban of MMT in unleaded gasoline. We would be happy to review specific information contained in the waiver application that

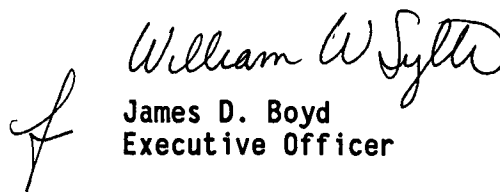
Air Docket (LE-131)

-3-

October 4, 1991

addresses our concerns. If you have questions, please contact Dan Donohoue, Manager of our Technical Analysis Section at (916) 322-8277.

Sincerely,

  
James D. Boyd  
Executive Officer

Enclosure

cc: Mary T. Smith, EPA

**AIR RESOURCES BOARD**  
 HAAGEN-SMIT LABORATORY  
 9528 TELSTAR AVENUE  
 EL MONTE, CA 91731-2990  
 PHONE: (818) 973-6800



August 10, 1990

Reference No. TF-90-009

Air Docket (LE-131)  
 Room H-1500  
 401 M. Street SW  
 Washington, DC 20460

To The Docket:

This correspondence contains our comments regarding the submittal, by the Ethyl Corporation, for a waiver to use the additive MMT (methylcyclopentadienyl manganese tricarbonyl) in unleaded gasoline. The ARB's overall concerns center on: (1) the potential "poisoning" of catalytic converters and oxygen sensors and (2) the unknown health effects associated with low ambient concentrations of manganese.

With respect to the poisoning of emission control devices, the vehicle testing conducted by Ethyl Corporation involved current technology. The ARB's newly proposed emission standards are likely to require new technology, some of which is currently in the developmental stage, e.g., electrically-heated catalytic converters. Besides the unknown effects of manganese on this new technology, the ARB is concerned that the anticipated lowering of emission standards will lead to an increased sensitivity of emission control systems with respect to catalyst and oxygen sensor durability. Since the ARB proposed standard for "ultra low emission vehicles" will be 0.04 g/mi NMHC, a small increase in HC mass emissions can represent a large percentage increase in emissions. Thus, the small HC emission increase that the Ethyl Corporation found between 1000 and 5000 odometer miles may be magnified for vehicles meeting a 0.04 g/mi NMHC standard. From the above, the ARB recommends that emission testing also be performed on vehicles equipped with electrically-heated catalytic converters. EPA has stated in a previous waiver denial that "where the emissions technology is available and imminent, and is reasonably certain to be applied in a prospective model year, the effects of MMT upon such technology should be examined" (43 FR 41424, 41426, September 18, 1978).

We have some additional concerns regarding the amount of manganese retained in the vehicle. Ethyl Corporation reports .4% of the additive as being emitted from the tailpipe. Thus, 99.6% is retained in either the catalytic converter, the exhaust system, or the sampling train. If it is assumed that the bulk of the manganese is retained in the converter, then approximately 60 grams will accumulate in the converter over 50,000 miles of use (assuming a fuel economy of 25 mi/gal). It is difficult to conceive that this loading would not effect catalyst performance.

Air Docket

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With respect to the health effects of manganese, the ARB is concerned with the current lack of information regarding chronic exposure to low ambient levels of manganese. Since the EPA is authorized to regulate fuel additives pursuant to section 211(a) and (b) of the Clean Air Act, in order to protect public health, the ARB recommends that the Ethyl Corporation submit additional health information in accordance with section 211(b). Specifically, the information should address the incremental effects of manganese added to the ambient air as a result of MMT usage.

Most importantly regarding this issue, the California Code of Regulations (CCR, Section 2254, Title 13) states that "...effective September 8, 1977, no person shall add manganese or any manganese compound, including the compound methylcyclopentadienyl manganese tricarbonyl (MMT), to unleaded gasoline intended to be sold, offered for sale, or delivered for sale at retail in the State of California." The Air Resources Board is strongly committed to the enforcement of this regulation.

To reiterate, we strongly discourage approval of the waiver and fully intend to enforce the California regulation banning the use of manganese as an additive in unleaded gasoline. We appreciate the opportunity to express our concerns. Should you have any questions regarding the above, please call Jim Lyons, Manager of the Toxics & Fuels Section at (818) 575-6621.

Sincerely,



K. D. Drachand, Chief  
Mobile Source Division

cc: Mary T. Smith, EPA